

# Introduction for Fisheries and Aquatic Biology

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## PREFACE

I was assigned to the department of fisheries in October 1965 when I was in the fourth semester of undergraduate course in Komaba Campus of The University of Tokyo. I decided to take the “Introduction to Fisheries Science” course in the semester. Back then, importance of general arts was emphasized, and specialized courses began from the third year. I suppose this course was aimed at familiarizing the students with the basics in fisheries science. I can still remember my feeling of excitement on the day of the first lecture by the famous Professor Yoshio Hiyama. This course was available for several years, and the lecturers were always relatively senior authorities on the subject. However, the course was dropped when the educational programs were revised. I guess that, diversification of research fields that followed this revision resulted in nurturing students, and simultaneously professors, without a holistic view of fisheries science. Whatever be the reason, this course has not been reintroduced so far.

In time, centralization of graduate school started and the Department of Fisheries moved from the faculty to graduate school, changing its name to the Department of Aquatic Bioscience. The centralization succeeded in increasing the number of master course students, with an inflow of many students from other universities. Among them were some who had not studied fisheries science in the undergraduate course, and needed lecturing on the basics in this field. Considering this scenario over the past ten years after the centralization of graduate school, we felt the necessity of a holistic fundamental text book on fisheries science. This need prompted the publication of the Japanese version of this book.

The original Japanese name of this book, “Suiken Seibutsu Kagaku Nyumon” means “Fundamentals in aquatic biology”. However, the content of the book is not limited only to the field of biology as a natural science, but also includes social science, particularly in Chapter V in which the relation between aqua-sphere and our society is specifically introduced. I became strongly convinced that the aqua-sphere could not exist without interaction with human society, and therefore requested Professor Kurokura to add Chapter V to the book. We discussed the concept of this chapter and composed it after several deliberations. Although it involved strenuous efforts, I feel we had a fruitful time.

Originally, I made this text book for undergraduate students—beginners of the study of fisheries science, and graduate students proceeding to the graduate schools of fisheries science without basic orientation of fisheries science. Agricultural science related undergraduate faculties include a variety of research and study fields resembling mini university. As a professor in the Faculty of Agriculture, working in a confined situation, I regret missing the chance to study other disciplines. One of the reasons I proposed the publication of this text book was my desire to provide an overview of general fisheries science to professors in other disciplines.

Some may say that an introductory book should be written by only one author. However, recent deepening and diversification of the research fields limits summarization of the outline of modern fisheries science by a single person. Collaboration of researchers in the different field of fisheries science was indispensable to make this text book available in a limited period. I requested the editors of each chapter to make an effort at keeping a unified style of the description. On the occasion of this publication, I express my sincere thanks to the editors and authors of the book for their collaboration and understanding of my purpose. This text book includes many figures and tables cited from other literatures. I also express my thanks to all those who allowed citation of the figures and tables. This text book may be unclear and require additional information. We are open to constructive critical suggestions from readers.

The publication of this text book would be difficult without the support of Mr. Masahiro KOSAKA of the publishing company Kouseisha-Kouseikaku. I take this opportunity to express my sincere appreciation for his valuable support.  
(Katsumi Aida)

#### MESSAGE FROM THE TRANSLATORS

Following the publication of the Japanese version of this book, Professor Kurokura began translating its contents to English with the aim of using it as a personal text book in his lecture for international students. There are many good fundamental text books in oceanography and biology and agricultural economy, though there are few books explaining the outline of fisheries science. This is due to the fact that fisheries science is an integrated discipline of fundamental sciences and no single person, or persons, in academics can have a holistic knowledge. The Japanese version, which was made in collaboration with many talented scientists under the strong leadership of Professor Katsumi Aida, resulted in a comprehensive and systematic text book. It can be used as a text book for explaining about fisheries science in Japan to the international students. Professor Kurokura needed more than half a year to make a rough draft of the English version, and to ask permission from Professor Aida for using the draft as personal text book in his lectures to the international students. Professor Aida not only permitted the use, but recommended him to get it edited and publish as the improved English version. He also intermediated in the negotiations for obtaining copyrights from Kouseisha-Kouseikaku, publisher of the Japanese version, and requested TERRAPUB to be the publisher of the English version. He further advised to obtain grant in aid from the Japan Society of Promotion of Science (JSPS) for publication of the English version. Kouseisha-Kouseiaku and TERRAPUB kindly accepted the request from Professor Kurokura, and JSPS provided the grant. Professors Aida and Kurokura requested Dr. Neelam Ramaiah to edit the draft and refine the English expressions. Professor Kurokura and Dr. Neelam had several discussions regarding the contents and translation/editing.

The Japanese version was aimed at Japanese students, and included many exemplifications and events from Japanese history and daily life. The Japanese

are familiar with it, but these details can be hardly understood by the foreigners when they read it in English without prior knowledge of the incidents. Moreover, some Japanese terminologies are quite difficult to translate into English, because the names of species, gears and social systems etc. are highly linked with daily life of fishers and aqua-culturists in the coastal areas of Japan. Thus, literal translation is impossible and, as much as possible we have attempted at finding similar words in English and retaining the original Japanese terms. We also took care to maintain the originality of the Japanese text written by each author. As a result, readers without prior knowledge about Japanese fisheries may find it incomprehensible at times, and we request the readers to be tolerant of this aspect associated with translation. However, we are hopeful that this may motivate the readers to develop an interest in Japanese fisheries, and a desire to know more about it.

Although the social issues depend on local history, culture and social system, most of the phenomena associated with natural sciences bear a global commonality and basic theory. The phenomena and events that occurred in Japan may not occur in other parts of the world. However, we believe this English version will be used as a fundamental text book for fisheries science especially in developing countries. We sincerely hope the future developments in fisheries industry and fisheries science in developing countries will be aimed at sustainability, and are in harmony with the environment, local culture and history. The thought that this book may contribute to the future developments in fisheries all over the world was a motivation for us that helped endure the difficulties in translation and editing of this book which took more than one year and a half.

We take this opportunity to express our heartfelt gratitude to Professor Aida for his guidance and support, to Kouseisha-Kouseikaku Co., Ltd. for kindly providing the copyright, to TERRAPUB especially to Ms. Yumi Terashima, and Ms. Yuko Chou for their assistance in translation and proof reading, to Dr. John Bower of Hokkaido University and Dr. Atsushi Yamamoto of Kagoshima University for their critical reading of Chapter III, and to the JSPS for providing the valuable grant (225236).